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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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09/730,558

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Timothy John Lindquist

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EXAMINER

WARE, CICELY Q

ART UNIT

PAPER NUMBER

2634

DATE MAILED: 04/01/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/730,558

Applicant(s)

LINDQUIST, TIMOTHY JOHN

Examiner

Cicely Ware

Art Unit

2634

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on amendment filed on 10/22/2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 16, 17 is/are allowed.
- 6) ☒ Claim(s) 1, 5-7, 11-15 and 18-23 is/are rejected.
- 7) ☒ Claim(s) 2-4 and 8-10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10/22/2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Claim Objections***

1. Claims 18, 20, and 22 are objected to because of the following informalities:
  - a. Claim 18, line 2, applicant uses the phrase "the set of processed data points in the sub-band of the second sub-band level is formed". Examiner suggests using "the set of processed data points in the sub-band of the second sub-band level are formed" for clarification purposes.
  - b. Claim 20, line 2, applicant uses the phrase "the set of processed data points in the sub-band of the second sub-band level is formed". Examiner suggests using "the set of processed data points in the sub-band of the second sub-band level are formed" for clarification purposes.
  - c. Claim 22, line 2, applicant uses the phrase "the set of processed data points in the sub-band of the second sub-band level is formed". Examiner suggests using "the set of processed data points in the sub-band of the second sub-band level are formed" for clarification purposes.

Appropriate correction is required.

### ***Response to Arguments***

2. Applicant's arguments, see REMARKS, filed 10/22/2004 with respect to the rejection(s) of claim(s) 1, 7, 13 and 15 under 35 U.S.C 102(e) and 2-6, 8-12, 14 under U.S.C 103(a) have been fully considered and are persuasive. Therefore, the rejection

has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Shapiro (US Patent 5,321,776).

***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1, 6-7, 12-15, 18-23 are rejected under 35 U.S.C. 102(b) as being anticipated by Shapiro (US Patent 5,321,776).

(1) With regard to claim 1, Shapiro discloses in (Fig. 1 and Figs. 5-8) a method for performing an Inverse Discrete Wavelet Transform (IDWT) comprising, for a first sub-band level and a second sub-band level in an N level Discrete Wavelet Transform, the steps of: processing sets of data points from corresponding sub-bands in the first sub-band level, to form a set of processed data points in a sub-band of the second sub-band level; and processing the set of processed data points in the sub-band of the second sub-band level in conjunction with at least one set of data points from a corresponding at least one sub-band of the second sub-band level, to form a set of processed data points in a sub-band of a subsequent sub-band level, where in each said set of data points is smaller than the number of data points in a corresponding sub-band level (col. 3, lines 50-57, 61-63, 65-68, col. 4, lines 20-27, 50-53, col. 5, lines 49-56).

(2) With regard to claim 6, claim 6 inherits all the limitations of claim 1. Shapiro further discloses a method for performing an IDWT in relation to a 2 dimensional N level Discrete Wavelet Transform, the method comprising steps of: processing sets of M x M data points (col. 3, lines 50-57, 61-63, 65-68, col. 4, lines 20-27, 50-53, col. 5, lines 49-56).

(5) With regard to claim 7, claim 7 inherits all the limitations of claim 1

(6) With regard to claim 12, claim 12 inherits all the limitations of claims 1 and 6.

(7) With regard to claim 13, claim 13 inherits all the limitations of claim 1. Shapiro further discloses a computer readable memory medium for storing a program for performing an IDWT (col. 3, lines 35-37, col. 7, lines 29-38, col. 8, lines 9-13).

(8) With regard to claim 14, claim 14 inherits all the limitations of claims 1, 6 and 13.

(9) With regard to claim 15, claim 15 inherits all the limitations of claim 1.

(10) With regard to claim 18, claim 18 inherits all the limitations of claim 1.

Shapiro further discloses in (Fig. 1) wherein the set of processed in the sub-band of second sub-band level is formed before all data points in the sub-bands of the first sub-band level are processed.

(11) With regard to claim 19, claim 19 inherits all the limitations of claim 1.

Shapiro further discloses in (Fig. 1) wherein the step (ii) commences before all data points in the sub-bands of the first sub-band level are processed.

(12) With regard to claim 20, claim 20 inherits all the limitations of claims 6 and 18.

(13) With regard to claim 21, claim 21 inherits all the limitations of claims 6 and 19.

(14) With regard to claim 22, claim 22 inherits all the limitations of claims 15 and 18.

(15) With regard to claim 23, claim 23 inherits all the limitations of claims 15 and 19.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shapiro (US Patent 5,321,776) as applied to claims 1 and 7, in view of Hsu et al. (US Patent 6,389,176).

(1) With regard to claim 5, claim 5 inherits all the limitations of any one of claims 1 to 4. However Shapiro does not disclose wherein the filters and the second filters are N dimensional separable IDWT transformers.

However Hsu et al. discloses wherein the filters and the second filters are N dimensional separable IDWT transformers (col. 1, lines 53-57, 60-67, col. 2, lines 1-3, col. 6, lines 23-32).

Therefore it would have been obvious to one of ordinary skill in the art to modify Shapiro in view of Hsu et al. to incorporate wherein the filters and the second filters are N dimensional separable IDWT transformers in order to output perfect reconstructed versions of initially input data, the finite-length of the filters and a regularity requirement that the iterated low pass filters involve convergence to continuous functions (Hsu et al., col. 2, lines 5-8).

(2) With regard to claim 11, claim 11 inherits all the limitations of any one of claims 7 to 10 and 5 above.

#### ***Allowable Subject Matter***

7. Claims 2-4, 8-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. The following is a statement of reasons for the indication of allowable subject matter: The instant application discloses a method for performing an Inverse Discrete Wavelet Transform. Prior art references show similar methods but fail to teach: **“wherein the second filters are affected by one set of dedicated filters in regard to processing of sub-band level 1”**, as in claims 2 and 8; **“wherein the time sharing is performed using a time multiplexer which multiplexes data from the sub-band level N to 2 to the time shared set of filters”**, as in claims 3 and 9; **“wherein data associated with sub-bands of one of said sub-band levels N to 2 is stored while the set of time shared filters are being applied to sub-bands of another one of said sub-band levels N to 2”**, as in claims 4 and 10.

8. Claims 16 and 17 allowed.

9. The following is a statement of reasons for the indication of allowable subject matter: The instant application discloses a method for performing an Inverse Discrete Wavelet Transform. Prior art references show similar methods but fail to teach: **“a first plurality of parallel convolvers each having a plurality of output data channels, a second plurality of serial convolvers each receiving data from corresponding ones of said output data channels ”**, as in claims 16 and 17.

### ***Conclusion***

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Cicely Ware whose telephone number is 703-305-8326. The examiner can normally be reached on Monday – Friday, 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephen Chin can be reached on 703-305-4714. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9314 for regular communications and 703-872-9314 for After Final communications.



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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

*Cicely Ware*

cqw  
March 11, 2005

A handwritten signature in black ink, appearing to read "Amanda T. Le". The signature is fluid and cursive, with a large initial "A" and a long, sweeping underline.

AMANDA T. LE  
PRIMARY EXAMINER